CMP7N65/CMF7N65

650V N-Channel MOSFET

General Description

These N-channel MOSFET are produced using advanced MOSFET Technology, which provides low onstate resistance, high switching performance and excellent quality.These devices are suitable device for SMPS, high Speed switching and general purpose applications.

Product Summary

BVDSS	RDSON	ID
650V	1.35Ω	7A

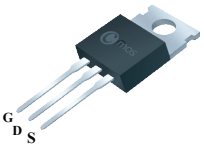
Applications

- Adaptor
- Power Supply
- High Current, High Speed Switching

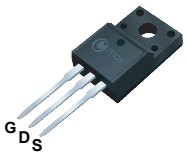
Features

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS Compliant

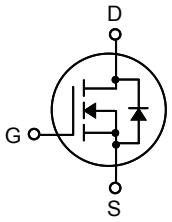
TO-220/220F Pin Configuration



TO-220
(CMP7N65)



TO-220F
(CMF7N65)



Absolute Maximum Ratings (Tc=25℃ unless otherwise noted)

Symbol	Parameter	220	220F	Units
V_{DSS}	Drain-Source Voltage	650		V
I_D	Drain Current - Continuous (T_C = 25℃)	7	7*	A
	Drain Current - Continuous (T_C = 100℃)	4.5	4.5*	A
I_{DM}	Drain Current - Pulsed [1]	21	21*	A
V_{GSS}	Gate-Source Voltage	±30		V
E_{AS}	Single Pulsed Avalanche Energy [2]	150		mJ
dv/dt	Peak Diode Recovery dv/dt	4.5		V/ns
P_D	Power Dissipation (T_C = 25℃)	160	50	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150		℃
T_L	Maximum lead temperature for soldering purposes, 1/8 from case for 5 seconds	300		℃

* Drain current limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	220	220F	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.85	2.6	℃/W
$R_{\theta CS}$	Thermal Resistance, Case-to-Sink Typ.[3]	0.5	---	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient [3,4]	62.5	62.5	℃/W

Electrical Characteristic (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 μA	650	--	--	V
$\triangle BV_{DSS}$ /$\triangle T_J$	Breakdown Voltage Temperature Coefficient	I_D = 250 μA, Referenced to 25℃	--	0.7	--	V/℃
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 650 V, V_{GS} = 0 V	--	--	1	μA
		V_{DS} = 520 V, T_C=125℃	--	--	10	
I_{GSSF}	Gate-Body Leakage Current, Forward	V_{GS} = 30 V, V_{DS} = 0 V	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	V_{GS} = -30 V, V_{DS} = 0 V	--	--	-100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 μA	2	--	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 3.5A	--	1.2	1.35	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	1500	--	pF
C_{oss}	Output Capacitance		--	110	--	pF
C_{rss}	Reverse Transfer Capacitance		--	13	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 325 V, I_D =7A R_G = 25Ω	--	20	--	ns
t_r	Turn-On Rise Time		--	50	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	80	--	ns
t_f	Turn-Off Fall Time		--	70	--	ns
Q_g	Total Gate Charge	V_{DS} = 520 V, I_D = 7A V_{GS} = 10 V	--	30	--	nC
Q_{gs}	Gate-Source Charge		--	5	--	nC
Q_{gd}	Gate-Drain Charge		--	12	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	7	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	21	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 7A	--	--	1.4	V

note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. L=8mH, I_{AS}=6A , V_{DD}=50V, R_G=25 Ω,Starting T_J=25 ℃.
3. The value of $R_{\theta JA}$ is measured with the device in a still air environment with T_A =25℃.
4. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to case $R_{\theta JC}$ and case to ambient.